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(54) Method and system for upgrading software on mobile terminal using OTA service provider

ABSTRACT

The present invention relates to mobile terminals, more specifically, a software upgrade method and system for mobile terminals using an OTA service provider, who maintains the terminal software installed on wireless terminals, for users to eliminate the need to visit service centers to upgrade terminal software as well as to protect personal information. The method according to the present invention comprises a step to prepare an upgrade by analyzing the software installed on the user's mobile terminal and a step to perform an upgrade by replacing the existing software installed on said mobile terminal with a new one.

From the user's standpoint, this method will make it possible to perform a safe and convenient upgrade of terminal software, as well as to fundamentally eliminate the disputes associated with potential leaking or loss of personal information while upgrading. In addition, this method will dramatically reduce the time required to upgrade the software in the mobile terminal, therefore will increase the reliability of the service provider.

REPRESENTIVE DRAWING

1/ Start

2/ Collection of mobile terminal software information

3/ Information analysis and preparation for upgrade

4/ Upgrade request from user

5/ Transmission

6/ No

7/ Check the success of transmission

7B/ Yes

8/ End

9/ Start

10/ Receive OTA service provider data

11/ No

12/ Check the success of receipt

13/ Yes

14/ Execution of command from OTA service provider data

15/ Transmit performance results to base station

16/ End

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OTA service provider, Upgrade

DESCRIPTION

BRIEF DESCRIPTION OF DRAWING

FIG. 1 shows the overall system according to the present invention.

FIG. 2 shows the service flow as provided by the terminal service provider according to the present invention.

FIG. 3 shows a data processing flow through the mobile terminal according to the present invention.

100: User   200: Customer Center

300: Mobile terminal manufacturer's server   400: User DB

500: OTA service provider   600: Mobile terminal

DETAILED DESCRIPTION OF INVENTION

PURPOSE OF INVENTION

FIELD OF THE INVENTION AND CONVENTIONAL TECHNOLOGY

The present invention relates to mobile terminals, specifically, a software upgrade method and system for mobile terminals using an OTA service providers who maintains the terminal software installed on wireless terminals for users to eliminate the need to visit service centers to upgrade terminal software as well as to protect personal information from loss while upgrading.

Recently, as the wireless service expands, the use of mobile terminals has increased exponentially.

Meanwhile, mobile communication service providers have been developing a variety of add-on services.

In order for the user to receive said add-on services on the terminal, the user must upgrade the mobile terminal software to the latest version.

Up to this point, the user is required to take his own terminal to the nearest service center of the manufacturer of the terminal to upgrade the terminal software.

In that case, the user must be informed of the latest mobile terminal software available to him and must visit a service center as frequently as necessary for upgrades.

Also, there is a risk of inadvertently losing user's data and leaking personal information by the technician at the service center while upgrading the software.

Furthermore, there is another problem of taking extra time to delete memory as the part of process of upgrading the software in said mobile terminal requires to completely delete the flash memory area before laying over an upgrade version in that area.

THE TECHNICAL OBJECT THE PRESENT INVENTION INTENDS TO ACHIEVE

Accordingly, taking the problems of the conventional technology into account, the invention is purposed to provide a method and system to upgrade software through an OTA service provider.

To achieve said object, the present invention characteristically comprises an upgrade preparation step

by analyzing the software information installed on the user's mobile terminal and a step to perform the upgrade by replacing the existing software installed on said mobile terminal with a new one.

Other objects, characteristics, and benefits of the present invention will be made clear through examples described in the attached drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Description will be provided with reference to the configuration and operation according to the examples.

The present invention will provide said software upgrade for mobile terminals through an OTA service provider.

For the purpose of said invention, said mobile terminal must have three functions as described below.

First, said mobile terminal should be able to provide information regarding the software version of the mobile terminal and the software compiling time information as required by the base station.

Second, the mobile terminal must have a RAM resident program already stored on the terminal to perform an upgrade and must be able to load a program in accordance with the commands received from said base station.

Third, said mobile terminal must maintain the function to communicate between the mobile terminal and the base station while performing a software upgrade.

Additionally, the mobile terminal manufacturer server must have user's mobile terminal information and software by maintaining user database. Upon receipt of software information of said mobile terminal, [said server] must be able to calculate the address where the difference occurs by comparing with the software information of the current mobile terminal through a linked user database and upgrade only that portion.

Furthermore, [the manufacturer's server] must be able to separately store said mobile terminal's information to protect from loss of personal data.

Lastly, for the sake of protection of personal information, said stored information must be deleted upon a successful upgrade.

FIG. 1 shows the mobile terminal software upgrade system according to the present invention.

In reference to the configuration of FIG. 1, [the system] comprises the user(100) using a mobile terminal (600), Customer Center (200) which links the mobile terminal (600) to the server (300) provided by the manufacturer, user database (400) containing user information and software information of the mobile terminal (600), an OTA service provider (500) which is in charge of data transmission between the mobile terminal (600), the mobile terminal (600) manufacturer's server (300), and the mobile terminal (600) which receives upgrade service.

The operation according to the system configuration in FIG. 1 is described below.

The first process is a step to analyze the software version of the mobile terminal (100) and the compile information.

The software version of said mobile terminal (600) and the compile information should be registered when registering user's mobile terminal (600) with the base station,

Said registered information determines whether it is necessary to upgrade software based on the information in the user database (400) which has been transmitted to the telecommunication service provider's server (300) and linked to the service provider's server (300).

At this point, if determined necessary to upgrade the software of said mobile terminal (600), such message will be sent to the user (100) through a text message.

Upon receiving such message, the user (100) may call Customer Center (200) at his convenience and hear a voice prompt (e.g., "Press XX for software upgrade"). By following such instruction, the user (100) may prompt upgrade service for said mobile terminal (600).

FIG. 2 shows the first process as described above.

As the first step, software information is collected (S100) through the base station; the collected information is then transmitted to the mobile monitor service provider's server (300) for analysis through user database (400) to perform an upgrade preparation (S101).

At this point, if there is need for an upgrade while performing a preparation, [it will be] notified to the mobile terminal (600) by a text message.

The user (100), upon received the text message, will call the Customer Center for an upgrade using a

toll-free number (S102).

When a call is made, an upgrade will begin as data is being transmitted. (S103)
Depending on the success of the transmission (S104), another attempt will be made to transmit the data if transmission failed.

The second process involves a comparison of the user's (100) mobile terminal (600) software against the latest version.

If it is determined in the first process that a software upgrade is necessary, the second process should be performed prior to a request for upgrade by said user (100).

This process occurs in the telecommunication service provider's server (300) and the portion where the upgrade is necessary will be determined through the data stored in the user database (400).

That is to say, instead of upgrading the entire software by deleting the content in the flash memory area on the mobile terminal (600) as in the case of the conventional method, only the portion where the upgrade is necessary will be upgraded.

All analysis data and the portion to be upgraded is maintained by user database (400) separately from the terminal software to reduce the time required for actual upgrade.

The third process involves backup of the personal information data from the user's (100) mobile terminal (600).

Above-mentioned process, as a protection measure against an accident, requires user information data from the user's (100) mobile terminal (600) and said data is stored in user database (400).

Above-mentioned process being a protection measure against an accident requires user information data from the user's (100) mobile terminal (600) and said data is stored in user database (400).

The fourth process involves a software upgrade using an OTA service provider.

As a step to upgrade the software in the mobile terminal (600) using pre-assigned information, the mobile terminal (600) loads a program necessary for an upgrade in the RAM area and prepares for an upgrade when upgrade start is transmitted to the user's (100) mobile terminal (600).

And, the telecommunication service provider server (300) will transmit the memory address where

upgrade is taking place and memory delete command to said mobile terminal (600).

Upon receiving said command, said mobile terminal (600) will execute the command.

After completion of deletion, the telecommunication service provider server (300) will be notified of the completion from said mobile terminal (600) and receives memory address to be recorded and memory record command through the OTA service provider.

After all steps have been completed, the stored user information data will be sent back to said mobile terminal (600) to terminate an actual upgrade.

Finally, said telecommunication service provider server (300) and the user data information stored in the linked user database (400) will be removed, notifying that all upgrade information is completed.

FIG. 3 shows above-describe fourth process.

First , data is collected through an OTA service provider. (S200)

Success of receipt of said data will be determined (S201) and a pre-assigned command will be executed according to the result. (S202)

The result of execution of said command will be sent to the base station (S203)

EFFECTS OF INVENTION

As described above, the software upgrade method for mobile terminals using an OTA service provider according to the present invention enables a safe and convenient terminal software upgrade from user's standpoint, fundamentally eliminates the disputes regarding disclosure and loss of personal information that could possibly happen during an upgrade process, drastically reduces the time needed for software upgrade in the mobile terminal, thus increasing the reliability of the service provider.

Through the description above, a variety of modifications can possibly be made within the scope of the technology according to the present invention.

Therefore, the technical scope of this present invention shall not be limited by the description of the examples but determined by the scope of claims.

(57) SCOPE OF CLAIMS

Claim 1

The step to analyze the software information installed on the user's mobile terminal; and the step to backup the user information from the user's mobile terminal as database; and the step to upgrade the portion where an upgrade is necessary using OTA service provider by comparing the user's mobile terminal against the latest mobile terminal; and a method to upgrade the software for mobile terminal using an OTA service provider including a step to delete the user information stored in the user database after performing above-mentioned upgrade.

Claim 2

The method of Claim 1, wherein the step to analyze the software information installed on said user's mobile terminal includes a software upgrade method using an OTA service provider in which the software information of said mobile terminal is transmitted to user database through a base station as an additional step.

Claim 3

The method of Claim 1, wherein the step to compare the software information of said user's mobile terminal against that of the latest mobile terminal includes a method to upgrade the software of a mobile terminal using a OTA service provider in which said notice for upgrade includes a step to deliver a text message to user's mobile terminal.

Claim 4

The method of Claim 1, wherein the step to upgrade the only portion where necessary after comparison the user's mobile terminal against the latest mobile terminal using an OTA service provider includes a step to first transmit upgrade start to said mobile terminal; and a step to load the program in the RAM area necessary to upgrade said mobile terminal according to above-mentioned transmission; and a step to transmit the memory address of the portion to upgrade and the delete command from the mobile terminal manufacturer's server; and a step to transmit address and upgrade data from the mobile terminal manufacturer's server upon executing said delete command; and a software upgrade method for mobile terminals using an OTA service provider which includes an addition step to transmit and store the user information data stored in user database upon completion of upgrade.

Claim 5

A software upgrade system for mobile terminals using an OTA service provider which comprises a Customer Center which links between the mobile terminal and the mobile terminal manufacturer's server; and the mobile terminal manufacturer's server which provides upgrade software by providing the latest software information relevant to said mobile terminal; and user database storing user information and software information about said mobile terminal; and an OTA service provider in charge of transmitting data between said mobile terminal and mobile terminal manufacturer's server; and a mobile terminal which receives upgrade service.

Claim 6

The method of Claim 5, wherein a software upgrade system for mobile terminals using an OTA service provider which is equipped with the following capabilities: said mobile terminal should be able to provide the information on the mobile terminal's software version and the terminal software's compile time as required by the base station; and should have stored a RAM resident program inside said mobile terminal as is necessary for software upgrade for the mobile terminal; and should be able to load the program in accordance with the command received from said base station; and said mobile terminal should maintain the minimum function, i.e. transmitting information between said mobile terminal and said base station while performing an upgrade.

Claim 7

The method of Claim 5, wherein a software upgrade system for mobile terminals using an OTA service provider which is equipped with the following capabilities: said mobile terminal manufacturer's server must have user's mobile terminal information and software by maintaining user database; should be able to calculate the address of the portion where a difference exists after comparing with the information of the latest mobile terminal software through the linked user database upon receiving the software information of the above-mentioned mobile terminal and upgrade only that portion; should be able to store said mobile terminal's information in user database as a protection measure against a loss of personal data; and said stored information should be deleted upon successful completion of upgrade for protection.

DRAWINGS

FIG. 1

1/ User

2/ Customer Center

3/ Mobile terminal manufacturer's server

4/ User database

5/ OTA service provider

6/ Mobile terminal

FIG. 2

1/ Start

2/ Collection of mobile terminal software information

3/ Information analysis and preparation for upgrade

4/ Upgrade request by user

5/ Transmission

6/ No

7/ Determination of successful transmission

8/ Yes

9/ End

FIG. 3

1/ Start

2/ Receipt of OTA service provider's data

3/ No

4/ Determination of successful reception

5/ Yes

6/ Receipt of pre-assigned command from OTA service provider's data

7/ Transmission of the result of reception

8/ End